SEQUENCE LISTING

<110> ImmunoGen, Inc.

<120> ANTI-CD33 ANTIBODIES AND METHODS FOR TREATMENT OF ACUTE MYELOID LEUKEMIA USING THE SAME

<130> A8427

<150> US 60/424,332
<151> 2002-11-07

<160> 94

<170> PatentIn version 3.2

<210> 1
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<400> 1

Ser Tyr Tyr Ile His
1 5

<210> 2
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<220>
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<222> (16)..(16)
<223> "X" may be K or Q

<400> 2

Val Ile Tyr Pro Gly Asn Asp Asp Ile Ser Tyr Asn Gln Lys Phe Xaa
1 5 10 15

Gly

<210> 3
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<212> PRT
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<400> 3

Glu Val Arg Leu Arg Tyr Phe Asp Val
1 5

<210> 4

<211> 17
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<400> 4

Lys Ser Ser Gln Ser Val Phe Phe Ser Ser Ser Gln Lys Asn Tyr Leu
1 5 10 15

Ala

<210> 5
<211> 7
<212> PRT
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<400> 5

Trp Ala Ser Thr Arg Glu Ser
1 5

<210> 6
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<400> 6

His Gln Tyr Leu Ser Ser Arg Thr
1 5

<210> 7
<211> 118
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<400> 7

Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Val Val Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Tyr Ile His Trp Ile Lys Gln Thr Pro Gly Gln Gly Leu Glu Trp Val
35 40 45

Gly Val Ile Tyr Pro Gly Asn Asp Asp Ile Ser Tyr Asn Gln Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Thr Thr Ala Tyr

65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Glu Val Arg Leu Arg Tyr Phe Asp Val Trp Gly Ala Gly Thr
100 105 110

Thr Val Thr Val Ser Ser
115

<210> 8
<211> 113
<212> PRT
<213> Mus musculus

<400> 8

Asn Ile Met Leu Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
1 5 10 15

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Val Phe Phe Ser
20 25 30

Ser Ser Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Ile Pro Gly Gln
35 40 45

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Gln Ser Glu Asp Leu Ala Ile Tyr Tyr Cys His Gln
85 90 95

Tyr Leu Ser Ser Arg Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

<210> 9
<211> 118
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<220>

<223> Humanized My9-6 antibody heavy chain variable region

<400> 9

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Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Val Val Lys Pro Gly Ala
1               5                  10                  15

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
            20                  25                  30

Tyr Ile His Trp Ile Lys Gln Thr Pro Gly Gln Gly Leu Glu Trp Val
        35                  40                  45

Gly Val Ile Tyr Pro Gly Asn Asp Asp Ile Ser Tyr Asn Gln Lys Phe
    50                  55                  60

Gln Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Thr Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Glu Val Arg Leu Arg Tyr Phe Asp Val Trp Gly Gln Gly Thr
            100                 105                 110

Thr Val Thr Val Ser Ser
        115
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<210> 10
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> Humanized My9-6 antibody light chain variable region

<400> 10

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Glu Ile Val Leu Thr Gln Ser Pro Gly Ser Leu Ala Val Ser Pro Gly
1               5                  10                  15

Glu Arg Val Thr Met Ser Cys Lys Ser Ser Gln Ser Val Phe Phe Ser
            20                  25                  30

Ser Ser Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Ile Pro Gly Gln
        35                  40                  45

Ser Pro Arg Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
    50                  55                  60
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Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Gln Pro Glu Asp Leu Ala Ile Tyr Tyr Cys His Gln
85 90 95

Tyr Leu Ser Ser Arg Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

<210> 11
<211> 46
<212> DNA
<213> Artificial Sequence

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<223> PCR primer HindKL

<400> 11
tatagagctc aagcttggat ggtgggaaga tggatacagt tggtgc 46

<210> 12
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer Bgl2IgG1

<400> 12
ggaagatcta tagacagatg ggggtgtcgt tttggc 36

<210> 13
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer EcoPolydC

<400> 13
tatatctaga attcccccccc cccccccccc 30

<210> 14
<211> 32
<212> DNA
<213> Artificial Sequence

<220>

<223> PCR primer SacIMK

<400> 14
gggagctcga yattgtgmts acmcarwctm ca 32

<210> 15
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer EcoR1MH1

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<221> misc_feature
<222> (18)..(18)
<223> "n" may be any nucleotide

<400> 15
cttccggaat tcsargtnma gctgsagsag tc 32

<210> 16
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer EcoR1MH2

<220>
<221> misc_feature
<222> (18)..(18)
<223> "n" may be any nucleotide

<400> 16
cttccggaat tcsargtnma gctgsagsag tcwgg 35

<210> 17
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer Leaddeg1

<220>
<221> misc_feature
<222> (26)..(26)
<223> "n" may be any nucleotide

<220>
<221> misc_feature
<222> (29)..(29)
<223> "n" may be any nucleotide

<400> 17
ttttgattct gctgtgggtg tccggnacnt gygg 34

<210> 18
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer Leaddeg2

<220>
<221> misc_feature
<222> (28)..(28)
<223> "n" may be any nucleotide

<220>
<221> misc_feature
<222> (31)..(31)
<223> "n" may be any nucleotide

<400> 18
ttttgattcg ctgctgctgc tgtgggtnws ngg 33

<210> 19
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer Leaddeg3

<220>
<221> misc_feature
<222> (31)..(31)
<223> "n" may be any nucleotide

<220>
<221> misc_feature
<222> (34)..(34)
<223> "n" may be any nucleotide

<400> 19
ttttgattcc caggtgttca tgctgctgyt nytntgggt 39

<210> 20
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer My96LCBsrG1

<400> 20

tacaggtgta cactccgata ttgtgatcac ccagactcc 39

<210> 21
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer My96LCOL1

<400> 21
actggaaatc aaacgaactg tggctgcacc atctg 35

<210> 22
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer My96LCOL2

<400> 22
gccacagttc gtttgatttc cagtttggtg cctcc 35

<210> 23
<211> 39
<212> DNA
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<220>
<223> Humanization primer My96HCBsrG1

<400> 23
tacaggtgta cactcccagg ttaagctgca gcagtctgg 39

<210> 24
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer My96HCOL1

<400> 24
ccacggtcac cgtctcctca gcctccacc 29

<210> 25
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer My96HCOL2

<400> 25

gaggctgagg agacggtgac cgtggtccc 29

<210> 26
<211> 43
<212> DNA
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<220>
<223> Humanization primer My9-6LCNMLS

<400> 26
caggtgtaca ctccaatatt atgctcaccc agagtccatc atc 43

<210> 27
<211> 42
<212> DNA
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<220>
<223> Humanization primer My9-6HCQP

<400> 27
caggtgtaca ctcccaggtt cagctgcagc agcctggggc tg 42

<210> 28
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer MY96HCQ64-1

<400> 28
agaagttcca aggcaaggcc ac 22

<210> 29
<211> 22
<212> DNA
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<220>
<223> Humanization primer MY96HCQ64-2

<400> 29
cttgccttgg aacttctgat tg 22

<210> 30
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer MY96HCQ105

<400> 30

cgatgggccc ttggtggagg ctgaggagac ggtgaccgtg gtcccttggc cccagacatc 60

<210> 31
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer MY96LCEVGPR

<400> 31
aggtgtacac tccgagattg tgctcaccca gagtccagga tctctggctg tgtctccagg 60

agaaagggtc actatgagc 79

<210> 32
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer MY96LCR45

<400> 32
gcctggtacc aacagatacc agggcagtct cctagacttc tgatctac 48

<210> 33
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer MY96LCP80-1

<400> 33
agcagtgttc aacctgaaga cctggc 26

<210> 34
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer MY96LCP80-2

<400> 34
gtcttcaggt tgaacactgc tgatgg 26

<210> 35
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer MY96LCQ100

<400> 35
ttttaagctt cgtttgattt ccagtttggt gccttgaccg aacgtccg 48

<210> 36
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer My96lcNM

<400> 36
caggtgtaca ctccaatatt atgctcaccc agag 34

<210> 37
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer MY96LCK45

<400> 37
gcctggtacc aacagatacc agggcagtct cctaaacttc tgatctac 48

<210> 38
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer My96HCApa1

<400> 38
cgatgggccc ttggtggagg ctgaggagac ggtgaccg 38

<210> 39
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer huMy96LCOL1

<400> 39
actggaaatc aaacgtacgg tggctgcacc atctg 35

<210> 40
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer huMy96LCOL2

<400> 40
gccaccgtac gtttgatttc cagtttggtg ccttg 35

<210> 41
<211> 34
<212> DNA
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<220>
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<400> 41
caggtgtaca ctccgagatt atgctcaccc agag 34

<210> 42
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer My96lcNV

<400> 42
caggtgtaca ctccaatatt gtgctcaccc agag 34

<210> 43
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Humanization primer chMy96lcBsiW1

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<210> 44
<211> 23
<212> PRT
<213> Mus musculus

<220>
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<400> 44

Asn Ile Met Leu Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
1 5 10 15

Glu Lys Val Thr Met Ser Xaa
20

<210> 45
<211> 23
<212> PRT
<213> Mus musculus

<400> 45

Asp Ile Val Ile Thr Gln Thr Pro Ser Ser Leu Ala Val Ser Ala Gly
1 5 10 15

Glu Lys Val Thr Met Ser Cys
20

<210> 46
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Degenerate primer Sac1MK

<400> 46

Gly Gly Gly Ala Gly Cys Thr Cys Gly Ala Tyr Ala Thr Thr Gly Thr
1 5 10 15

Gly Met Thr Ser Ala Cys Met Cys Ala Arg Trp Cys Thr Met Cys Ala
20 25 30

<210> 47
<211> 23
<212> PRT
<213> Mus musculus

<400> 47

Asn Ile Met Leu Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
1 5 10 15

Glu Lys Val Thr Met Ser Cys
20

<210> 48
<211> 17
<212> PRT
<213> Mus musculus

<400> 48

Lys Ser Ser Gln Ser Val Phe Phe Ser Ser Ser Gln Lys Asn Tyr Leu
1 5 10 15

Ala

<210> 49
<211> 12
<212> PRT
<213> Mus musculus

<400> 49

Ser Ser Gln Ser Val Phe Phe Ser Ser Ser Gln Lys
1 5 10

<210> 50
<211> 12
<212> PRT
<213> Mus musculus

<400> 50

Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser
1 5 10

<210> 51
<211> 11
<212> PRT
<213> Mus musculus

<400> 51

Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu
1 5 10

<210> 52
<211> 19
<212> PRT
<213> Mus musculus

<400> 52

Arg Tyr Phe Asp Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ser
1 5 10 15

Ala Lys Thr

<210> 53
<211> 20
<212> PRT
<213> Mus musculus

<400> 53

Glu Val Arg Leu Arg Tyr Phe Asp Val Trp Gly Ala Gly Thr Thr Val
1 5 10 15

Thr Val Ser Ser
20

<210> 54
<211> 19
<212> PRT
<213> Mus musculus

<400> 54

Met Gly Glu Asp Ala Met Asp Tyr Trp Gly Gln Gly Thr Ser Val Thr
1 5 10 15

Val Ser Ser

<210> 55
<211> 339
<212> DNA
<213> Mus musculus

<400> 55
aacattatgc tgacacagtc gccatcatct ctggctgtgt ctgcaggaga aaaggtcact 60

atgagctgta agtccagtca aagtgttttt ttcagttcaa gtcagaagaa ctacttggcc 120

tggtaccaac agataccagg gcagtctcct aaacttctga tctactgggc atccactagg 180

gaatctggtg tccctgatcg cttcacaggc agtggatctg ggacagattt tactcttacc 240

atcagcagtg tacaatctga agacctggca atttattact gtcatcaata cctctcctcg 300

cggacgttcg gtggaggcac caaactggaa atcaaacga 339

<210> 56
<211> 354
<212> DNA
<213> Mus musculus

<400> 56
caggtgcaac tgcagcagcc tggggctgag gtggtgaagc ctggggcctc agtgaagatg 60

tcctgcaagg cttctggcta cacatttacc agttactata tacactggat aaagcagaca 120

cctggacagg gcctggaatg ggttggagtt atttatccag gaaatgatga tatttcctac 180

aatcagaagt tcaaaggcaa ggccacattg actgcagaca aatcctccac cacagcctac 240

atgcaactca gcagcctgac atctgaggac tctgcggtct attactgtgc aagagaggtt 300

cgtctacggt acttcgatgt ctggggcgca gggaccacgg tcaccgtctc ctca 354

<210> 57
<211> 17
<212> PRT
<213> Mus musculus

<400> 57

Val Ile Tyr Pro Gly Asn Asp Asp Ile Ser Tyr Asn Gln Lys Phe Lys
1 5 10 15

Gly

<210> 58
<211> 10
<212> PRT
<213> Mus musculus

<400> 58

Gly Tyr Thr Phe Thr Ser Tyr Tyr Ile His
1 5 10

<210> 59
<211> 10
<212> PRT
<213> Mus musculus

<400> 59

Val Ile Tyr Pro Gly Asn Asp Asp Ile Ser
1 5 10

<210> 60
<211> 99
<212> PRT
<213> Mus musculus

<400> 60

Asn Ile Met Met Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
1 5 10 15

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30

Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

```
Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65                  70                  75                  80

Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys His Gln
                85                  90                  95

Tyr Leu Ser
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<210> 61
<211> 96
<212> PRT
<213> Mus musculus

<400> 61

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Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys Pro Gly Ala Ser
1               5                   10                  15

Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr Trp
            20                  25                  30

Met His Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile Gly
        35                  40                  45

Arg Ile His Pro Ser Asp Ser Asp Thr Asn Tyr Asn Gln Lys Phe Lys
    50                  55                  60

Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr Met
65                  70                  75                  80

Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala
                85                  90                  95
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<210> 62
<211> 114
<212> PRT
<213> Mus musculus

<400> 62

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Asn Ile Met Leu Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
1               5                   10                  15

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Val Phe Phe Ser
            20                  25                  30

Ser Ser Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Ile Pro Gly Gln
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35 40 45

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Gln Ser Glu Asp Leu Ala Ile Tyr Tyr Cys His Gln
85 90 95

Tyr Leu Ser Ser Arg Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg Ala

<210> 63
<211> 115
<212> PRT
<213> Mus musculus

<400> 63

Asp Ile Val Met Ser Gln Ser Pro Ser Ser Leu Ala Val Ser Val Gly
1 5 10 15

Glu Lys Val Thr Met Thr Cys Lys Ser Ser Gln Ser Leu Leu Tyr Ser
20 25 30

Ser Asn Gln Met Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Glu Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln
85 90 95

Tyr His Ser Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile
100 105 110

Lys Arg Ala
115

<210> 64
<211> 115
<212> PRT
<213> Mus musculus

<400> 64

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Thr Val Thr Ala Gly
1 5 10 15

Glu Lys Val Thr Met Ser Cys Thr Ser Ser Gln Ser Leu Phe Asn Ser
20 25 30

Gly Lys Gln Lys Asn Tyr Leu Thr Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Pro Pro Lys Val Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
85 90 95

Asp Tyr Ser Asn Pro Leu Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu
100 105 110

Lys Arg Ala
115

<210> 65
<211> 115
<212> PRT
<213> Mus musculus

<400> 65

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Thr Val Thr Thr Gly
1 5 10 15

Glu Lys Val Thr Met Thr Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

Gly Ala Gln Lys Asn Tyr Leu Thr Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser
65 70 75 80

Ile Ser Gly Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
85 90 95

Asn Tyr Asn Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
100 105 110

Lys Arg Ala
115

<210> 66
<211> 115
<212> PRT
<213> Mus musculus

<400> 66

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Thr Val Thr Thr Gly
1 5 10 15

Glu Lys Val Thr Met Thr Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

Arg Thr Gln Lys Asn Tyr Leu Thr Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser
65 70 75 80

Ile Ser Gly Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
85 90 95

Asn Tyr Asn Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
100 105 110

Lys Arg Ala
115

<210> 67

<211> 115
<212> PRT
<213> Mus musculus

<400> 67

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Thr Val Thr Ala Gly
1 5 10 15

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
20 25 30

Gly Lys Arg Lys Asn Phe Leu Thr Trp Tyr His Gln Lys Pro Gly Gln
35 40 45

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Thr Ser Val Gln Ala Glu Asp Leu Ala Ile Tyr Tyr Cys Gln Asn
85 90 95

Asp Tyr Ser His Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
100 105 110

Lys Arg Ala
115

<210> 68
<211> 115
<212> PRT
<213> Mus musculus

<400> 68

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ser Val Ser Ala Gly
1 5 10 15

Glu Arg Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

Gly Asn Gln Lys Asn Phe Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Pro Pro Lys Leu Leu Ile Tyr Gly Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

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Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65                  70                  75                  80

Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
                85                  90                  95

Asp His Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Ile
            100                 105                 110

Lys Arg Ala
        115
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<210> 69
<211> 113
<212> PRT
<213> Mus musculus

<400> 69

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Asp Val Val Met Thr Gln Thr Pro Ser Ser Leu Ala Met Ser Val Gly
1               5                   10                  15

Gln Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ile
            20                  25                  30

Ser Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35                  40                  45

Ser Pro Lys Leu Leu Val Tyr Phe Ala Ser Thr Arg Glu Ser Gly Val
    50                  55                  60

Pro Asp Arg Phe Ile Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65                  70                  75                  80

Ile Ser Ser Val Gln Ala Glu Asp Gln Ala Asp Tyr Phe Cys Gln Gln
                85                  90                  95

His Tyr Arg Ala Pro Arg Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile
            100                 105                 110

Lys
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<210> 70
<211> 114
<212> PRT
<213> Mus musculus

<400> 70

Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30

Ser Asn Ser Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
85 90 95

Tyr Tyr Ser Thr Pro Tyr Ser Phe Gly Gln Gly Thr Lys Leu Glu Ile
100 105 110

Lys Arg

<210> 71
<211> 113
<212> PRT
<213> Mus musculus

<400> 71

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Thr Val Thr Ala Gly
1 5 10 15

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
20 25 30

Gly Asn Gln Lys Asn Tyr Leu Thr Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

```
Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
                85                  90                  95

Asp Tyr Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Pro
            100                 105                 110

Gly
```

<210> 72
<211> 109
<212> PRT
<213> Mus musculus

<400> 72

```
Asp Ile Val Met Thr Gln Ser Pro Lys Phe Met Ser Thr Ser Val Gly
1               5                   10                  15

Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
            20                  25                  30

Val Val Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
        35                  40                  45

Tyr Trp Ala Ser Thr Arg His Ile Gly Val Pro Asp Arg Phe Ala Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Val Gln Ala
65                  70                  75                  80

Glu Asp Leu Ala Leu Tyr Tyr Cys Gln Gln His Tyr Ser Pro Pro Trp
                85                  90                  95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg Ala
            100                 105
```

<210> 73
<211> 117
<212> PRT
<213> Mus musculus

<400> 73

```
Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Val Val Lys Pro Gly Ala
1               5                   10                  15
```

```
Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
            20                  25                  30

Tyr Ile His Trp Ile Lys Gln Thr Pro Gly Gln Gly Leu Glu Trp Val
        35                  40                  45

Gly Val Ile Tyr Pro Gly Asn Asp Asp Ile Ser Tyr Asn Gln Lys Phe
    50                  55                  60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Thr Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Glu Val Arg Leu Arg Tyr Phe Asp Val Trp Gly Ala Gly Thr
            100                 105                 110

Thr Val Thr Val Ser
        115
```

<210> 74
<211> 116
<212> PRT
<213> Mus musculus

<400> 74

```
Gln Ile Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg Pro Gly Ala
1               5                   10                  15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp Tyr
            20                  25                  30

Tyr Ile His Trp Val Lys Gln Arg Pro Gly Glu Gly Leu Glu Trp Ile
        35                  40                  45

Gly Trp Ile Tyr Pro Gly Ser Gly Asn Thr Lys Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Lys Ala Thr Leu Thr Val Asp Thr Ser Ser Ser Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
                85                  90                  95

Ala Arg Gly Gly Lys Phe Ala Met Asp Tyr Trp Gly Gln Gly Thr Ser
```

100 105 110

Val Thr Val Ser
115

<210> 75
<211> 119
<212> PRT
<213> Mus musculus

<400> 75

Gln Ile Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp Tyr
20 25 30

Tyr Ile Asn Trp Met Lys Gln Lys Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

Gly Trp Ile Asp Pro Gly Ser Gly Asn Thr Lys Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Val Asp Thr Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Phe Cys
85 90 95

Ala Arg Glu Lys Thr Thr Tyr Tyr Tyr Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Ser Val Thr Val Ser
115

<210> 76
<211> 118
<212> PRT
<213> Mus musculus

<400> 76

Gln Gly Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Pro Gly Ser
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ala Phe Ser Ser Phe
20 25 30

```
Trp Val Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Gln Ile Tyr Pro Gly Asp Gly Asp Asn Lys Tyr Asn Gly Lys Phe
    50                  55                  60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Thr Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Tyr Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
                85                  90                  95

Ala Arg Ser Gly Asn Tyr Pro Tyr Ala Met Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Ser Val Thr Val Ser
        115
```

<210> 77
<211> 113
<212> PRT
<213> Mus musculus

<400> 77

```
Val Lys Leu Gln Glu Ser Gly Ala Glu Leu Ala Arg Pro Gly Ala Ser
1               5                   10                  15

Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Thr Tyr Thr
            20                  25                  30

Ile His Trp Ile Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile Gly
        35                  40                  45

Tyr Ile Asn Pro Ser Ser Val Tyr Thr Asn Tyr Asn Gln Arg Phe Lys
    50                  55                  60

Asp Lys Ala Thr Leu Thr Arg Asp Arg Ser Ser Asn Thr Ala Asn Ile
65                  70                  75                  80

His Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Tyr Cys Val
                85                  90                  95

Arg Glu Gly Glu Val Pro Tyr Trp Gly Gln Gly Thr Thr Val Thr Val
            100                 105                 110
```

Ser

<210> 78
<211> 113
<212> PRT
<213> Mus musculus

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> "X" may be any amino acid

<400> 78

Xaa Val Gln Leu Gln Gln Ser Asp Ala Glu Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp His
20 25 30

Ala Ile His Trp Ala Lys Gln Lys Pro Glu Gln Gly Leu Glu Trp Ile
35 40 45

Gly Tyr Ile Ser Pro Gly Asn Asp Asp Ile Lys Tyr Asn Glu Lys Phe
50 55 60

Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Gln Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
85 90 95

Lys Arg Ser Tyr Tyr Gly His Trp Gly Gln Gly Thr Thr Leu Thr Val
100 105 110

Ser

<210> 79
<211> 118
<212> PRT
<213> Mus musculus

<400> 79

Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly Ala Ser
1 5 10 15

```
Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr Trp
            20                  25                  30

Met His Trp Val Lys Gln Arg Pro Gly Arg Gly Leu Glu Trp Ile Gly
        35                  40                  45

Arg Ile Asp Pro Asn Ser Gly Gly Thr Lys Tyr Asn Glu Lys Phe Lys
    50                  55                  60

Ser Lys Ala Thr Leu Thr Val Asp Lys Pro Ser Ser Thr Ala Tyr Met
65                  70                  75                  80

Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala
                85                  90                  95

Arg Tyr Asp Tyr Tyr Gly Ser Ser Tyr Phe Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Thr Val Thr Val Ser
        115
```

<210> 80
<211> 114
<212> PRT
<213> Mus musculus

<400> 80

```
Gln Leu Gln Gln Ser Gly Thr Val Leu Ala Arg Pro Gly Ala Ser Val
1               5                   10                  15

Lys Met Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr Arg Tyr Trp Met
            20                  25                  30

His Trp Ile Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile Gly Ala
        35                  40                  45

Ile Tyr Pro Gly Asn Ser Asp Thr Ser Tyr Asn Gln Lys Phe Glu Gly
    50                  55                  60

Lys Ala Lys Leu Thr Ala Val Thr Ser Ala Ser Thr Ala Tyr Met Glu
65                  70                  75                  80

Leu Ser Ser Leu Thr His Glu Asp Ser Ala Val Tyr Tyr Cys Ser Arg
                85                  90                  95

Asp Tyr Gly Tyr Tyr Phe Asp Phe Trp Gly Gln Gly Thr Thr Leu Thr
```

100 105 110

Val Ser

<210> 81
<211> 116
<212> PRT
<213> Mus musculus

<400> 81

Glu Val Gln Leu Gln Gln Ser Gly Pro Asp Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ser Phe Ser Thr Tyr
20 25 30

Tyr Met His Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp Ile
35 40 45

Gly Arg Val Asp Pro Asp Asn Gly Gly Thr Ser Phe Asn Gln Lys Phe
50 55 60

Lys Gly Lys Ala Ile Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Gly Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Arg Asp Asp Tyr Tyr Phe Asp Phe Trp Gly Gln Gly Thr Ser
100 105 110

Leu Thr Val Ser
115

<210> 82
<211> 119
<212> PRT
<213> Mus musculus

<400> 82

Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Met Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Ser Phe
20 25 30

```
Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
        35                  40                  45

Gly Glu Ile Leu Pro Gly Ser Gly Gly Thr His Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Lys Ala Thr Phe Thr Ala Asp Lys Ser Ser Asn Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Gly His Ser Tyr Tyr Phe Tyr Asp Gly Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Ser Val Thr Val Ser
        115
```

<210> 83
<211> 123
<212> PRT
<213> Mus musculus

<400> 83

```
Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Ala Gly Ser
1               5                   10                  15

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
            20                  25                  30

Gly Val Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Tyr Ile Asn Pro Gly Lys Gly Tyr Leu Ser Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Lys Thr Thr Leu Thr Val Asp Arg Ser Ser Ser Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Arg Ser Leu Thr Ser Glu Asp Ala Ala Val Tyr Phe Cys
                85                  90                  95

Ala Arg Ser Phe Tyr Gly Gly Ser Asp Leu Ala Val Tyr Tyr Phe Asp
            100                 105                 110
```

Ser Trp Gly Gln Gly Thr Thr Leu Thr Val Ser
115 120

<210> 84
<211> 21
<212> PRT
<213> Homo sapien

<400> 84

Asn Met Thr Ser Ala Lys Pro Gly Gln Lys Gly Asp Ser Asp Ser Glu
1 5 10 15

Gly Lys Lys Arg Ala
20

<210> 85
<211> 21
<212> PRT
<213> Homo sapien

<400> 85

Asp Gln Thr Ser Val Arg Pro Gly Glu Lys Gly Ser Ser Asp Pro Glu
1 5 10 15

Gly Lys Lys Arg Thr
20

<210> 86
<211> 20
<212> PRT
<213> Homo sapien

<400> 86

Asp Val Thr Ser Val Arg Pro Gly Lys Lys Gly Ser Ser Asp Pro Glu
1 5 10 15

Gly Lys Lys Arg
20

<210> 87
<211> 21
<212> PRT
<213> Homo sapien

<400> 87

Asp Gln Thr Ser Val Arg Pro Gly Lys Lys Gly Ser Ser Asp Pro Glu
1 5 10 15

Gln Lys Lys Arg Thr
20

<210> 88
<211> 20
<212> PRT
<213> Homo sapien

<400> 88

Glu Val Thr Gly Pro Arg Pro Gly Gln Arg Gly Asp Ser Asp Pro Glu
1 5 10 15

Gln Lys Lys Arg
20

<210> 89
<211> 20
<212> PRT
<213> Homo sapien

<400> 89

Asp Val Thr Leu Leu Pro Pro Gly Gln Arg Gly Asp Ala Asp Ala Glu
1 5 10 15

Gln Lys Lys Arg
20

<210> 90
<211> 24
<212> PRT
<213> Homo sapien

<400> 90

Gln Gln Ala Val Lys Pro Gly Lys Gly Thr Pro Gly Gln Gln Lys Lys
1 5 10 15

Gly Lys Ser Ser Ser Glu Ala Ser
20

<210> 91
<211> 24
<212> PRT
<213> Homo sapien

<400> 91

Gln Gln Ala Val Lys Pro Gly Lys Gly Thr Pro Gly Gln Gln Lys Gln
1 5 10 15

Gly Thr Pro Ser Ser Glu Lys Ser
20

<210> 92
<211> 24
<212> PRT
<213> Homo sapien

<400> 92

Gln Gln Ala Ala Lys Pro Gly Lys Gly Thr Pro Gly Gln Gln Lys Gln
1 5 10 15

Gly Gly Ser Ser Ser Glu Gln Ser
20

<210> 93
<211> 24
<212> PRT
<213> Homo sapien

<400> 93

Gln Gln Ala Val Lys Pro Gly Lys Gly Thr Pro Gly Gln Gln Lys Gln
1 5 10 15

Gly Thr Ser Ser Ser Glu Gln Ser
20

<210> 94
<211> 23
<212> PRT
<213> Homo sapien

<400> 94

Gln Ala Val Lys Pro Gly Lys Gly Thr Pro Gly Gln Gln Lys Gln Gly
1 5 10 15

Lys Ser Ser Ser Glu Gln Ser
20